WIRELESS DEVICE 108

WIRELESS DEVICE 104

WIRELESS DEVICE 106 (INFO PROVIDER)

WIRELESS DEVICE 116 (INFO PROVIDER)

WIRELESS DEVICE 114

WIRELESS DEVICE 118

BASEBALL AD HOC NETWORK 102

COLLABORATION AD HOC NETWORK 112

130

130'

KEY PAD 208

BROWSER 102

INITIAL MENU

1 - TELEPHONE, INTERNET, FILE SHARING

2 - NETWORK BASEBALL

3 - COLLABORATION

4 - AD HOC NETWORK DISCOVERY
SUB-MENU
a - SELECT ALL AD HOC NETWORKS TO VIEW
b - SELECT PARTICULAR DEVICE CLASS TO VIEW
c - SELECT PARTICULAR SERVICE CLASS TO VIEW
d - SELECT PARTICULAR SERVICE ATTRIBUTE TO VIEW
e - SELECT CLASSES OF DEVICES TO BE BLOCKED
f - QUICK SEARCH

205

DISPLAY 212

USER'S ARRIVING WIRELESS DEVICE 100

FIG. 1

FIG. 1A

INTERNET
123

ARRIVING DEVICE
SEARCHES FOR
REMOTE DEVICES

INTERNET
GATEWAY
125

BLUETOOTH
DEVICE
100

BLUETOOTH
SLAVE
128

BLUETOOTH
MASTER
124

LINK
129

LINK
127

AD HOC
INTERNET
GATEWAY
PICONET
122

BLUETOOTH
SLAVE
126
(INFO PROV)

AD HOC NETWORK
INFORMATION PROVIDER

AD HOC NETWORK
INFORMATION PROVIDERS

BLUETOOTH
SLAVE
106
(INFO PROV)

AD HOC
BASEBALL
PICONET
102

BLUETOOTH
SLAVE
116
(INFO PROV)

AD HOC
COLLABORATION
PICONET
112

LINK
107

LINK
117

BLUETOOTH
MASTER
104

LINK
109

BLUETOOTH
SLAVE
108

BLUETOOTH
MASTER
114

LINK
119

BLUETOOTH
SLAVE
118

FIG. 1B

INTERNET
123

AD HOC
INTERNET
GATEWAY
PICONET
122

INTERNET
GATEWAY
125

ARRIVING DEVICE BROWSES OR
SEARCHES THE RESPONDING
REMOTE DEVICES AND
ACCESSES THE SERVICE RECORDS
OF THE AD HOC NETWORK
INFORMATION PROVIDERS
IN MULTIPLE PICONETS

BLUETOOTH
SLAVE
128

LINK
129

BLUETOOTH
MASTER
124

BLUETOOTH
DEVICE
100

130"

LINK
127

AD HOC
BASEBALL
PICONET
102

130

130'

BLUETOOTH
SLAVE
126
(INFO PROV)

131

BLUETOOTH
SLAVE
106
(INFO PROV)

BLUETOOTH
SLAVE
116
(INFO PROV)

AD HOC
COLLABORATION
PICONET
112

LINK
107

LINK
117

BLUETOOTH
MASTER
104

LINK
109

BLUETOOTH
SLAVE
108

BLUETOOTH
MASTER
114

LINK
119

BLUETOOTH
SLAVE
118

FIG. 1C

INTERNET
123

INTERNET
GATEWAY
125

AD HOC
INTERNET
GATEWAY
PICONET
122

ARRIVING DEVICE
SELECTS ATTRIBUTES OF
INTEREST IN THE ACCESSED
SERVICE RECORDS
OR
DETERMINES THE
CHARACTERISTICS OF THE
RECEIVED SIGNALS FROM
THE MASTER DEVICES
IN MULTIPLE PICONETS

BLUETOOTH
SLAVE
128

LINK
129

BLUETOOTH
MASTER
124

BLUETOOTH
DEVICE
100

140"

LINK
127

BLUETOOTH
SLAVE
126
(INFO PROV)

AD HOC
BASEBALL
PICONET
102

140

140'

BLUETOOTH
SLAVE
116
(INFO PROV)

AD HOC
COLLABORATION
PICONET
112

BLUETOOTH
SLAVE
106
(INFO PROV)

LINK
117

LINK
107

BLUETOOTH
MASTER
104

LINK
109

BLUETOOTH
SLAVE
108

BLUETOOTH
MASTER
114

LINK
119

BLUETOOTH
SLAVE
118

FIG. 1D

INTERNET
123

INTERNET
GATEWAY
125

ARRIVING DEVICE
FORMS A NETWORK DISCOVERY
MENU INCLUDING DESCRIPTIONS
OF AD HOC NETWORK
APPLICATION PROGRAMS
RUNNING IN MULTIPLE PICONETS,
DERIVED FROM THE ACCESSED
SERVICE RECORDS AND
RANKED ACCORDING TO THE
SELECTED ATTRIBUTES OR TO THE
SIGNAL CHARACTERISTICS

BLUETOOTH
SLAVE
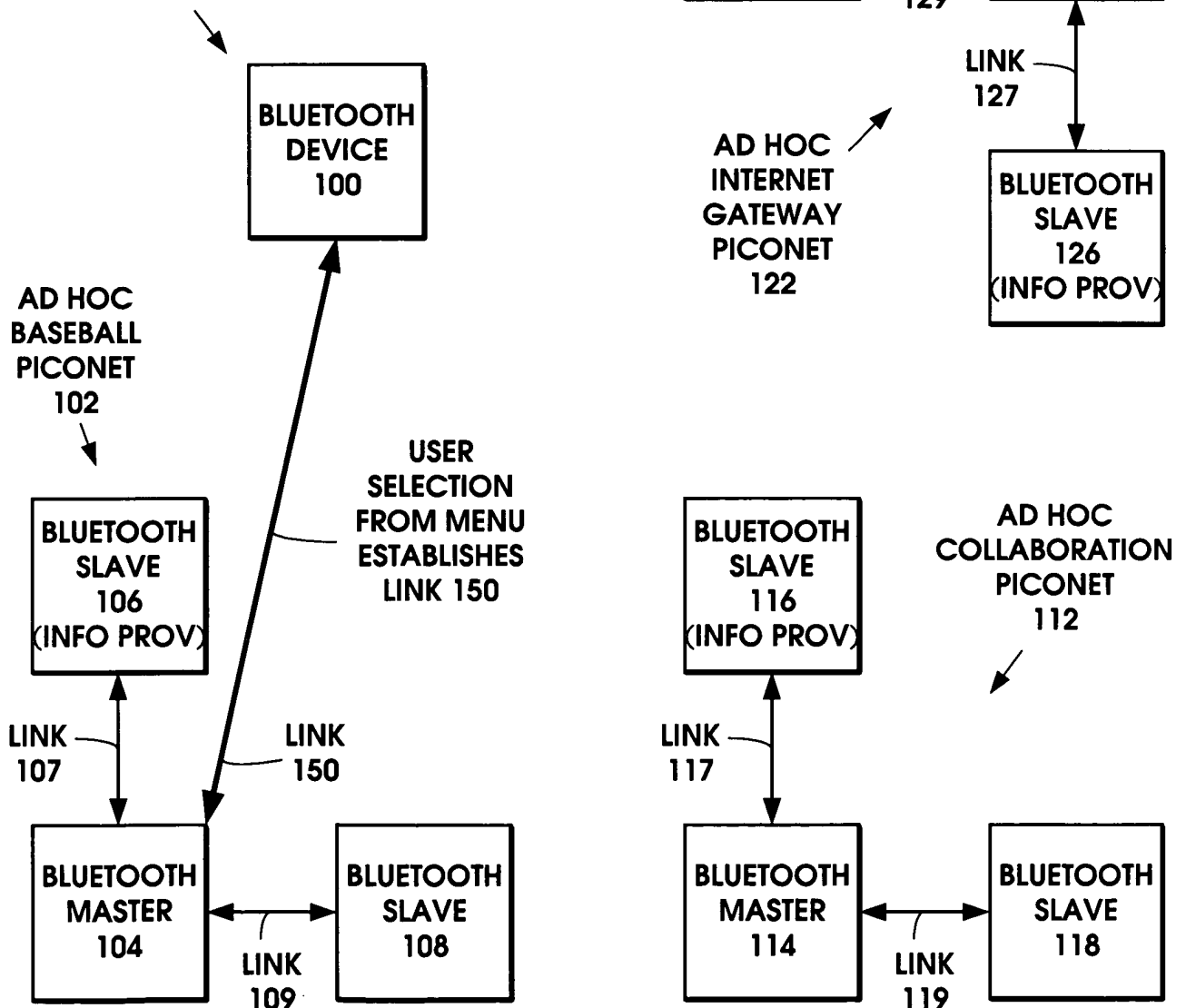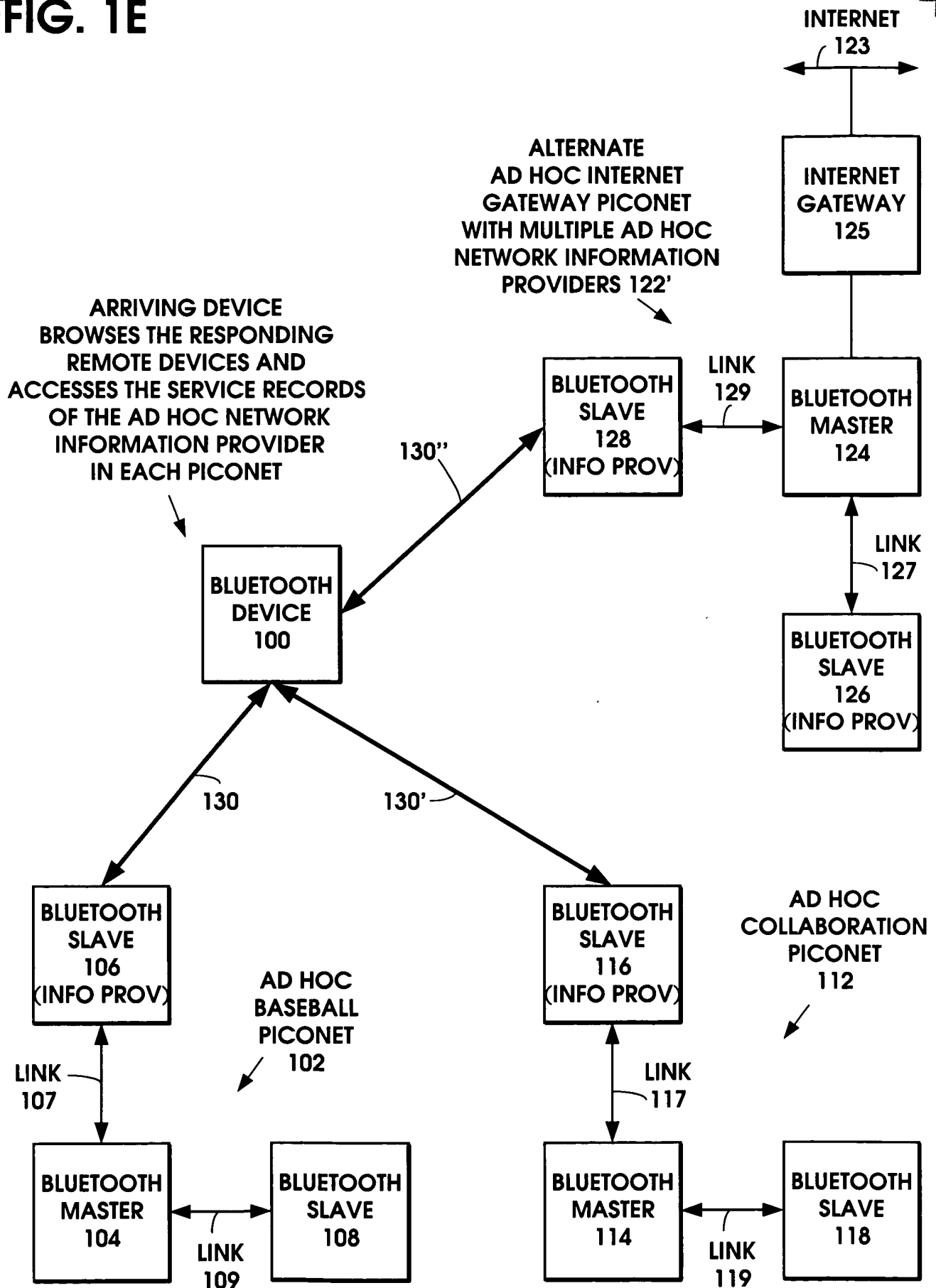128

LINK
129

BLUETOOTH
MASTER
124

AD HOC
INTERNET
GATEWAY
PICONET
122

LINK
127

BLUETOOTH
DEVICE
100

BLUETOOTH
SLAVE
126
(INFO PROV)

AD HOC
BASEBALL
PICONET
102

USER
SELECTION
FROM MENU
ESTABLISHES
LINK 150

BLUETOOTH
SLAVE
106
(INFO PROV)

BLUETOOTH
SLAVE
116
(INFO PROV)

AD HOC
COLLABORATION
PICONET
112

LINK
107

LINK
150

LINK
117

BLUETOOTH
MASTER
104

LINK
109

BLUETOOTH
SLAVE
108

BLUETOOTH
MASTER
114

LINK
119

BLUETOOTH
SLAVE
118

FIG. 1E

INTERNET
123

INTERNET
GATEWAY
125

ALTERNATE
AD HOC INTERNET
GATEWAY PICONET
WITH MULTIPLE AD HOC
NETWORK INFORMATION
PROVIDERS 122'

LINK
129

BLUETOOTH
MASTER
124

BLUETOOTH
SLAVE
128
(INFO PROV)

130''

LINK
127

ARRIVING DEVICE
BROWSES THE RESPONDING
REMOTE DEVICES AND
ACCESSES THE SERVICE RECORDS
OF THE AD HOC NETWORK
INFORMATION PROVIDER
IN EACH PICONET

BLUETOOTH
DEVICE
100

BLUETOOTH
SLAVE
126
(INFO PROV)

130

130'

AD HOC
COLLABORATION
PICONET
112

BLUETOOTH
SLAVE
106
(INFO PROV)

BLUETOOTH
SLAVE
116
(INFO PROV)

AD HOC
BASEBALL
PICONET
102

LINK
107

LINK
117

BLUETOOTH
MASTER
104

BLUETOOTH
SLAVE
108

BLUETOOTH
MASTER
114

BLUETOOTH
SLAVE
118

LINK
109

LINK
119

FIG. 1F

AD HOC NETWORK
102'

BLUETOOTH SLAVE (4) 100'	BLUETOOTH SLAVE (1) 106 (PRIMARY INFO. PROV.)	BLUETOOTH SLAVE (3) 100

141   107   130

BLUETOOTH SLAVE (5) 106'	BLUETOOTH MASTER 104	BLUETOOTH SLAVE (2) 108 (BACKUP INFO. PROV.)

143   109

FIG. 1G

AD HOC NETWORK
102''

BLUETOOTH SLAVE (4) 100' (INFO. PROV.)	BLUETOOTH SLAVE (1) 106 (INFO. PROV.)	BLUETOOTH SLAVE (3) 100 (INFO. PROV.)

141   107   130

BLUETOOTH SLAVE (5) 106' (INFO. PROV.)	BLUETOOTH MASTER 104 (INFO. PROV.)	BLUETOOTH SLAVE (2) 108 (INFO. PROV.)

143   109

FIG. 2A

WIRELESS DEVICE 100

MEMORY 202

APPLICATION GROUP 234

| CREATE REGISTRY FOR NEW MEMBER OF AD HOC NETWORK PGM. 280 (FIG. 3A) | INITIAL MENU APPLICATION PROGRAM 300 (FIG. 3B) | AD HOC NETWORK SEARCH (APPLIC. PGM.) 412 (FIG. 3D) |

| SERVICE RECORD UPDATE (APPLIC. PGM.) 330 (FIG. 3E) | NETWORK DISCOVERY MENU (APPLIC. PGM.) 340 (FIG. 3F) | SEARCH OPTIONS LIST TABLE 700 | ACTIVE SDP SERVICE REGISTRY 600 (FIG. 5) |

| NETWORK BASEBALL (APPLIC. PGM.) 320 (FIG. 3C) | NETWORK COLLABORATION (APPLIC. PGM.) 350 (FIG. 3F) | INQUIRY RESPONSE TABLE 710 | PACKET BUFFER 515 |

| | | NETWORK RANKING TABLE 720 | NETWORK DISCOVERY TABLE 360 |

MIDDLEWARE PROTOCOL GROUP 224

226 SERVICE DISCOVERY PROTOCOL   228 OBJECT EXCHANGE

TRANSPORT PROTOCOL GROUP 214

220 LOGICAL LINK CONTROL AND ADAPTATION PROTOCOL

216 LINK CONTROLLER & BASEBAND   218 LINK MANAGER

BUS 204

| RADIO 206 | KEYPAD 208 | CENTRAL PROCESSOR 210 | DISPLAY 212 |

ARRIVING
WIRELESS DEVICE 100

KEYPAD
208

HYPERLINKS 235

DISPLAY 212

AD HOC NETWORK DISCOVERY MENU

AD HOC NETWORKS RANKED BY SIGNAL STRENGTH

1 - BASEBALL - CUBS VS. METS - 3RD INNING - SCORE 2 TO 2 ------- ACCESS_CODE_1
  MEMBER: STEPHANE (METS - PITCHER)
  MEMBER: JOHN (CUBS - AT BAT)
  MEMBER: MIKKO (METS - FIRST BASE)

2 - CAD COLLABORATION - CIVIL ENGINEERING STUDENTS - ----------- ACCESS_CODE_2
  MEMBER: ALICE (DESIGNING BRIDGE DECK)
  MEMBER: BOB (DESIGNING BRIDGE TRUSS)
  MEMBER: CHARLIE (DESIGNING BRIDGE PIER)

3 - PUBLIC INTERNET GATEWAY ------------------------------------ ACCESS_CODE_3
  MEMBER: GATEWAY INTERFACE (PORTS ARE AVAILABLE)
  MEMBER: DAN (COMMUNICATING)
  MEMBER: ELIZABETH (COMMUNICATING)

FIG. 2B

Mikko Olkkonen, Kai Nyman, Stephane Bouet
AD HOC NETWORKING DISCOVERY MENU
28377 (4208-4003)

ARRIVING
WIRELESS DEVICE 100

HYPERLINKS 235

KEYPAD
208

DISPLAY 212

AD HOC NETWORK DISCOVERY MENU

AD HOC NETWORKS LISTED BY MEMBERS

MEMBER: ALICE (CAD COLLABORATION)----------ACCESS_CODE_1
MEMBER: BOB (CAD COLLABORATION)----------ACCESS_CODE_1
MEMBER: CHARLIE (CAD COLLABORATION)----------ACCESS_CODE_1
MEMBER: DAN (INTERNET GATEWAY)----------ACCESS_CODE_2
MEMBER: ELIZABETH (INTERNET GATEWAY)----------ACCESS_CODE_2
MEMBER: GATEWAY (INTERNET GATEWAY)----------ACCESS_CODE_2
MEMBER: JOHN (BASEBALL)----------ACCESS_CODE_3
MEMBER: MIKKO (BASEBALL)----------ACCESS_CODE_3
MEMBER: STEPHANE (BASEBALL)----------ACCESS_CODE_3

FIG. 2C

FIG. 3

START HERE

ARRIVING DEVICE 100

SEARCHES FOR AD HOC NETWORKS (FIG. 3D) — 266

BROWSE NEARBY DEVICES FOR SERVICE RECORDS — 268

IDENTIFIES AND PAGES AD HOC INFO PROVIDER — 270

PREPARES & DISPLAYS AD HOC NETWORK DISCOVERY MENU (FIG. 3F) — 276

SECOND SLAVE DEVICE 108

REQUESTS ADDRESS OF AD HOC INFO PROVIDER (FIG. 3A) — 258

WRITES NON-PROVIDER STATUS IN SDP REGISTRY — 260

SENDS SERVICE RECORDS FROM SDP REGISTRY — 267

MASTER DEVICE 104

MASTER LINKS WITH FIRST SLAVE DEVICE — 250

MASTER LINKS WITH SECOND SLAVE DEVICE — 256

MASTER RECEIVES UPDATE INFO FROM ANY SLAVE (FIG. 3C) — 261

FORWARDS UPDATE INFO TO AD HOC PROVIDER — 262

AD HOC NETWORK INFORMATION PROVIDER 106

FIRST SLAVE IN PICONET IS AD HOC INFO PROVIDER (FIG. 3A) — 252

AD HOC INFO PROVIDER OPENS SDP REGISTRY — 254

WAITS FOR ANY UPDATE MESSAGE FROM MASTER — 255

UPDATES SDP SERVICE REGISTRY TO SHOW CURRENT STATUS (FIG. 3A) — 264

ACCESS SERVICE RECORDS FROM SDP REGISTRY — 272

SENDS SERVICE RECORDS ON STATUS OF PICONET — 274

FIG. 3A   CREATE REGISTRY FOR NEW MEMBER OF PICONET PROGRAM 280

282 DEVICE ENTERS CONNECTED STATE IN A PICONET AND HAS BEEN ASSIGNED A MEMBER NUMBER (AM_ADDR) BY THE MASTER DEVICE

NOT FIRST SLAVE

FIRST SLAVE (AM_ADDR = 1) BECOMES
AD HOC NETWORK INFO PROVIDER

283 ?

289 WRITE DEVICE'S STATUS AS "AD HOC NETWORK INFO PROVIDER" CLASS-OF-DEVICE IN FHS PACKET BUFFER

284 REQUEST ADDRESS OF AD HOC NETWORK INFORMATION PROVIDER FROM MASTER

290 WRITE DEVICE'S STATUS AS "AD HOC NETWORK INFO PROVIDER" ATTRIBUTE IN SDP SERVICE REGISTRY

286 WRITE DEVICE'S STATUS AS "NON-INFO PROVIDER" AS ATTRIBUTE IN SDP SERVICE REGISTRY

292 ALLOCATE BROWSING HIERARCHY OF SERVICE CLASSES IN AD HOC NETWORK INFO PROVIDER'S SDP SERVICE REGISTRY:
(1) PROGRAM TYPES IN THIS PICONET
(2) MEMBERS IN THIS PICONET
(3) ENCRYPTION TYPE IN THIS PICONET
(4) NUMBER OF DEVICES IN THIS PICONET
(5) OTHER SERVICE CLASSES IN PICONET

288 WRITE ADDRESS OF AD HOC NETWORK INFORMATION PROVIDER AS ATTRIBUTE IN SDP SERVICE REGISTRY

295 GO TO INITIAL MENU APPLICATION PROGRAM (FIG. 3B)

294 DAEMON THREAD WAITS FOR ANY UPDATE MESSAGE FROM OTHER DEVICES IN THIS PICONET RELAYED BY MASTER

296 RECEIVE SERVICE ATTRIBUTE UPDATE MESSAGE RELAYED BY MASTER

298 UPDATE SERVICE ATTRIBUTES IN AD HOC NETWORK INFO PROVIDER SDP SERVICE REGISTRY

FIG. 3B

INITIAL MENU
APPLICATION
PROGRAM
300

```
DISPLAY INITIAL MENU                                    302
1 - TELEPHONE, INTERNET, FILE SHARING
2 - NETWORK BASEBALL
3 - COLLABORATION
4 - AD HOC NETWORK DISCOVERY
```

WAIT FOR MENU OPTION SELECTION   304

TELEPHONE, INTERNET,
FILE SHARING SELECTED

? 305

306

GO TO TELEPHONE, INTERNET, FILE SHARING
SUB-MENU

NETWORK BASEBALL SELECTED

? 307

308

GO TO AD HOC NETWORK BASEBALL
APPLICATION PROGRAM (FIG. 3C)

COLLABORATION SELECTED

? 309

310

GO TO AD HOC NETWORK
COLLABORATION APPLIC. PGM. (FIG. 3G)

AD HOC NETWORK DISCOVERY SELECTED

314

? 311

312

OTHER

```
DISPLAY SUB-MENU
a-SELECT ALL AD HOC NETWORKS TO VIEW
b-SELECT PARTICULAR DEVICE CLASS TO VIEW
c-SELECT PARTICULAR SERVICE CLASS TO VIEW
d-SELECT PARTICULAR SERVICE ATTRIBUTE TO VIEW
e-SELECT CLASSES OF DEVICES TO BE BLOCKED
```

"ALL NETWORKS" SELECTED   315   "SELECT CLASS OR ATTRIBUTE" SELECTED

316

?

318

```
BOTH ATTRIBUTE AND CLASS = NULL;
GO TO AD HOC NETWORK SEARCH
APPLICATION PROGRAM (FIG. 3D)
```

```
CLASS/ATTRIBUTE= KEYPAD ENTRY(S);
GO TO AD HOC NETWORK SEARCH
APPLICATION PROGRAM (FIG. 3D)
```

FIG. 3C

NETWORK
BASEBALL
(APPLIC. PGM)
320

BEGIN NETWORK BASEBALL

IF LOCAL DEVICE IS PICONET MASTER
    THEN GO TO BROADCAST ROUTINE
    ELSE GO TO UPDATE SCORE ROUTINE

322

324

MASTER BROADCAST ROUTINE

IF NEW DATA HAS BEEN RECEIVED FROM A SLAVE DEVICE
    THEN FORWARD NEW DATA TO AD HOC NETWORK INFO PROVIDER
ELSE IF NEW DATA HAS BEEN GENERATED BY MASTER DEVICE
    THEN SEND NEW DATA TO AD HOC NETWORK INFO PROVIDER
ELSE GO TO UPDATE ROUTINE

326

UPDATE SCORE ROUTINE

UPDATE SCOREBOARD WITH NEW DATA
SET VALUES FOR HANDLE_UUID, PROTOCOLS
SET VALUES FOR ATTRIBUTE_ID_1, SIZE
SET STRING STRING_DATA =
"BASEBALL" + TEAM1 + "VS." + TEAM2 + "INNING" + INNING_NO +
"SCORE" + SCORE1 + "TO" + SCORE2
SET VALUES FOR ATTRIBUTE_ID_2, SIZE,
SET INTEGER PICONET_ACCESS_CODE = MASTER BD_ADDR
CALL SERVICE RECORD UPDATE ROUTINE (FIG. 3E)
    TO CREATE UPDATED SERVICE RECORD
IF LOCAL DEVICE IS NOT AD HOC NETWORK INFO PROVIDER ,
    THEN SEND UPDATED SERVICE RECORD TO MASTER DEVICE
    FOR FORWARDING TO AD HOC NETWORK INFO PROVIDER
GO TO PLAY BALL ROUTINE

328

PLAY BALL ROUTINE

CORE NETWORK GAME PROGRAM GENERATES NEW GAME DATA
CALL SERVICE RECORD UPDATE ROUTINE (FIG. 3E)
    TO CREATE UPDATED SERVICE RECORD
IF LOCAL DEVICE IS NOT AD HOC NETWORK INFO PROVIDER ,
    THEN SEND UPDATED SERVICE RECORD TO MASTER DEVICE
    FOR FORWARDING TO AD HOC NETWORK INFO PROVIDER
RETURN

FIG. 3D

FROM INITIAL MENU APPLICATION (FIG. 3B) — 400

AD HOC NETWORK DISCOVERY ← ? → NETWORK APPLICATION SELECTED

402

412
AD HOC NETWORK SEARCH APPLICATION PROGRAM

404 → AD HOC NETWORK BASEBALL (FIG. 3C)

406 → AD HOC NETWORK COLLABORATION (FIG. 3G)

413
CALL LINK CONTROLLER TO SEND INQUIRES TO REMOTE DEVICES AND BUILD RESPONSE TABLE

414 — ?

INFO-PROVIDER CoD / NO USER- SPECIFIED CoD

415
IDENTIFY DEVICES WITH INFO-PROVIDER (CoD) CLASS-OF-DEVICE

417
IDENTIFY DEVICES WITH OTHER USER-SPECIFIED CLASS-OF-DEVICE

419
OTHER PROGRAMMED OPTIONS FOR RESPONDING DEVICES

SEARCH SERVICE RECORDS OF INFO-PROVIDER DEVICES
416

418
SEARCH SERVICE RECORDS OF DEVICES WITH OTHER CoD

420
BROWSE SERVICE RECORDS OF RESPONDING DEVICES

EXAMINE SERVICE RECORDS — 421

UN-AWARE DEVICE / DEVICE IS INFO PROVIDER / RESPONDING DEVICE IS NOT AN AD HOC NETWORK INFO PROVIDER

? — 422

423
LIST UN-AWARE DEVICE WITH CoD IN AD HOC DISCOVERY MENU

424
PAGE AND SEARCH SERVICE RECORDS OF AD HOC NETWORK INFO PROVIDER IN SAME NETWORK AS RESPONDING DEVICE

LIST SERVICE RECORDS OF ALL AD HOC NETWORK INFO PROVIDERS — 426

? — 427 — NO USER SELECTED CLASSES/ATTRIBUTES

432
ANALYZE SPECIFIED SERVICE CLASSES AND/OR SERVICE ATTRIBUTES

428
DETERMINE SIGNAL CHARACTERISTICS OF AD HOC NETWORK

RANK AD HOC NETWORKS BY SPECIFIED SERVICE CLASS/ATTRIBUTE
434

RANK AD HOC NETWORKS BY SIGNAL CHARACTERISTICS
430

GO TO NETWORK DISCOVERY MENU APPLICATION PROGRAM (FIG. 3F) — 436

FIG. 3E

SERVICE RECORD
UPDATE
(APPLIC. PGM)
330

```
SERVICE RECORD UPDATE ROUTINE

SET VALUES FROM LOCAL AD HOC NETWORK APPLICATION PROGRAM
ServiceRecordHandle = HANDLE_UUID
ServiceClass = "NETWORK_SERVICE"
ProtocolDescriptorList = PROTOCOLS
AttributeIdentifier1 = ATTRIBUTE_ID_1
AttributeType1 = "STRING"
AttributeSize1 = SIZE
AttributeData1 = STRING_DATA
AttributeIdentifier2 = ATTRIBUTE_ID_2
AttributeType2 = "INTEGER"
AttributeSize2 = SIZE
AttributeData2 = PICONET_ACCESS_CODE

WRITE UPDATED SERVICE RECORD TO LOCAL SDP SERVICE REGISTRY AS
ServiceRecordHandle / ServiceClass / ProtocolDescriptorList /
AttributeIdentifier1 / AttributeType1 / AttributeSize1 / AttributeData1 /
AttributeIdentifier2 / AttributeType2 / AttributeSize2 / AttributeData2

RETURN
```

FIG. 3F

340

```
BEGIN NETWORK DISCOVERY MENU APPLICATION IN ARRIVING DEVICE

DISPLAY NETWORK DISCOVERY MENU
OPTION      STRING
1           "BASEBALL CUBS VS. METS 3RD INNING SCORE 2 TO 2"
2           "CAD COLLABORATION NEED HELP DESIGNING BRIDGE TRUSS"
3           "INDIVIDUALS CONNECTED TO INTERNET GATEWAY DEVICE"
WAIT FOR SELECTION
IF OPTION = 1 THEN
SEND PAGE TO AD HOC BASEBALL PICONET MASTER DEVICE
        USING AD HOC BASEBALL PICONET_ACCESS_CODE
RECEIVE ID PACKET FROM AD HOC BASEBALL MASTER DEVICE
        WHICH ASSUMES TEMPORARY ROLE AS REMOTE SLAVE
        TO ARRIVING DEVICE WHICH ASSUMES TEMPORARY ROLE AS
        MASTER IN A TEMPORARY NEW PICONET
SET UP LINK BETWEEN ARRIVING DEVICE AND REMOTE DEVICE
REQUEST BY ARRIVING DEVICE TO SWITCH MASTER/SLAVE ROLES
ARRIVING DEVICE BECOMES SLAVE AND REMOTE DEVICE RESUMES
        MASTER ROLE IN AD HOC BASEBALL PICONET

ELSE IF OPTION = 2 THEN
SEND PAGE TO AD HOC COLLABORATION PICONET MASTER DEVICE
        USING AD HOC COLLABORATION PICONET_ACCESS_CODE
RECEIVE ID PACKET FROM AD HOC COLLABORATION MASTER
SET UP LINK BETWEEN ARRIVING DEVICE AND REMOTE DEVICE
REQUEST BY ARRIVING DEVICE TO SWITCH MASTER/SLAVE ROLES
ARRIVING DEVICE BECOMES SLAVE AND REMOTE DEVICE RESUMES
        MASTER ROLE IN AD HOC COLLABORATION PICONET

ELSE IF OPTION = 3 THEN
SEND PAGE TO AD HOC INTERNET GATEWAY PICONET MASTER DEVICE
        USING AD HOC INTERNET GATEWAY PICONET_ACCESS_CODE
RECEIVE ID PACKET FROM AD HOC INTERNET GATEWAY MASTER
SET UP LINK BETWEEN ARRIVING DEVICE AND REMOTE DEVICE
REQUEST BY ARRIVING DEVICE TO SWITCH MASTER/SLAVE ROLES
ARRIVING DEVICE BECOMES SLAVE AND REMOTE DEVICE RESUMES
MASTER ROLE IN AD HOC INTERNET GATEWAY PICONET

ELSE RETURN
```

FIG. 3G

NETWORK
COLLABORATION
(APPLIC. PGM)
350

```
BEGIN CAD NETWORK COLLABORATION                    352

IF LOCAL DEVICE IS PICONET MASTER
        THEN GO TO BROADCAST ROUTINE
        ELSE GO TO UPDATE SCORE ROUTINE
```

```
354

MASTER BROADCAST ROUTINE

IF NEW DATA HAS BEEN RECEIVED FROM A SLAVE DEVICE
        THEN FORWARD NEW DATA TO AD HOC NETWORK INFO PROVIDER
ELSE IF NEW DATA HAS BEEN GENERATED BY MASTER DEVICE
        THEN SEND NEW DATA TO AD HOC NETWORK INFO PROVIDER
ELSE GO TO UPDATE ROUTINE
```

```
356

UPDATE CAD DESIGN ROUTINE

UPDATE DESIGN STATUS WITH NEW DATA
SET VALUES FOR HANDLE_UUID, PROTOCOLS
SET VALUES FOR ATTRIBUTE_ID_1, SIZE
SET STRING STRING_DATA =
"CAD COLLABORATION" + "NEED HELP DESIGNING" +
NEED1+ NEED2+ NEED3
SET VALUES FOR ATTRIBUTE_ID_2, SIZE,
SET INTEGER PICONET_ACCESS_CODE = MASTER BD_ADDR
CALL SERVICE RECORD UPDATE ROUTINE (FIG. 3E)
        TO CREATE UPDATED SERVICE RECORD
IF LOCAL DEVICE IS NOT AD HOC NETWORK INFO PROVIDER ,
        THEN SEND UPDATED SERVICE RECORD TO MASTER DEVICE
        FOR FORWARDING TO AD HOC NETWORK INFO PROVIDER
GO TO CAD NETWORK COLLABORATION ROUTINE
```

```
358

CAD NETWORK COLLABORATION ROUTINE

CORE CAD NETWORK COLLABORATION PROGRAM GENERATES NEW DATA
CALL SERVICE RECORD UPDATE ROUTINE (FIG. 3E)
        TO CREATE UPDATED SERVICE RECORD
IF LOCAL DEVICE IS NOT AD HOC NETWORK INFO PROVIDER ,
        THEN SEND UPDATED SERVICE RECORD TO MASTER DEVICE
        FOR FORWARDING TO AD HOC NETWORK INFO PROVIDER
RETURN
```

FIG. 4A

BLUETOOTH PACKET STRUCTURE
FOR AN INQUIRY PACKET
SENT BY ARRIVING DEVICE 100

GENERAL INQUIRY ACCESS CODE (GIAC)

500

FIG. 4B

BLUETOOTH FHS PACKET STRUCTURE
FOR AN INQUIRY RESPONSE PACKET
SENT BY AD HOC NETWORK
INFORMATION PROVIDER 106

ACCESS CODE FIELD	HEADER		PARITY	ADDRESS BD_ADDR DEV. 106	CLASS OF DEVICE DEV. 106	AM_ADDR SET=0	CLOCK DEV. 106
	AM_ADDR SET=0	TYPE					
512	514	516	518	520	522	524	526

510

522

CoD = AD HOC NETWORK
INFORMATION PROVIDER

522
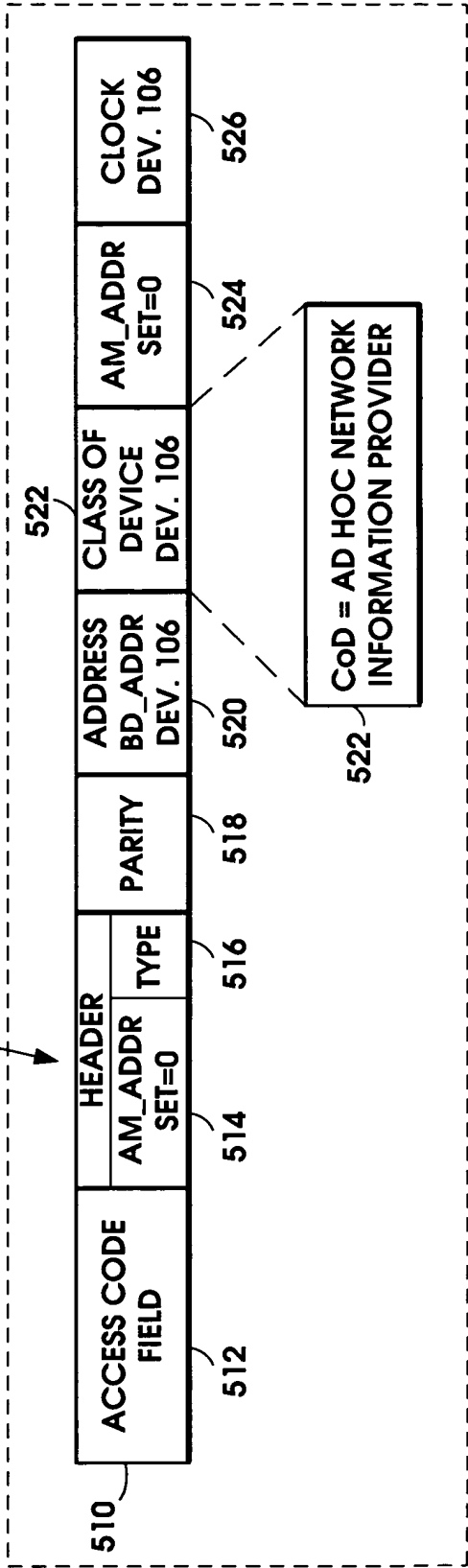
FHS PACKET BUFFER 515

FIG. 4C

530

BLUETOOTH PACKET STRUCTURE
FOR A PAGING PACKET
SENT BY ARRIVING DEVICE 100

| ACCESS CODE ADDRESS OF DEVICE 106 | HEADER | | PARITY | ADDRESS BD_ADDR DEV. 100 | CLASS OF DEVICE DEV. 100 | AM_ADDR SET=1 | CLOCK DEV. 100 |
	AM_ADDR SET=1	TYPE					
532	534	536	538	540	542	544	546

FIG. 4D

550
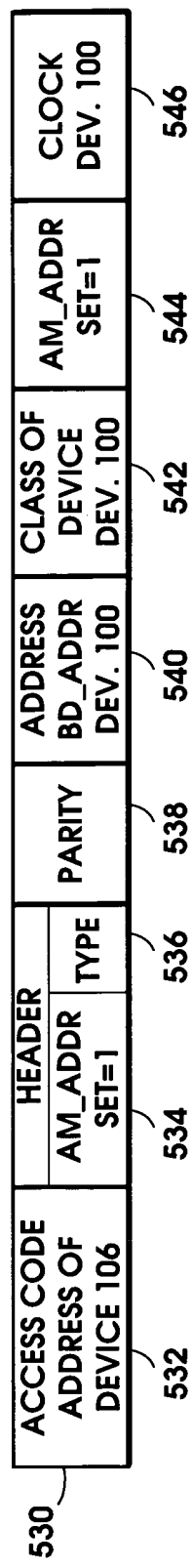
BLUETOOTH PACKET STRUCTURE
FOR A PAGE ACKNOWLEDGEMENT PACKET
SENT BY AD HOC NETWORK INFORMATION
PROVIDER 106

| ACCESS CODE ADDRESS OF DEVICE 100 | HEADER | |
	AM_ADDR SET=1	NULL
552	554	556

FIG. 4E

BLUETOOTH PACKET STRUCTURE FOR
SDP SERVICE SEARCH ATTRIBUTE REQUEST PACKET
SENT BY ARRIVING DEVICE 100
TO AD HOC NETWORK INFORMATION PROVIDER 106

HEADER			SDP PROTOCOL DATA UNIT			
ACCESS CODE ADDRESS OF DEVICE 100	AM_ADDR SET=1	ACL	PDU ID	TRANS-ACTION ID	LENGTH	SDP SERVICE SEARCH ATTRIBUTE REQUEST
563	564	564'	565	565'	566	567

561

562

567

SERVICE SEARCH PATTERN 568 AND ATTRIBUTE ID LIST 569

UUID: INFO_PROVIDER	UUID: LAST UPDATE
614'	615'

UUID: ENCRYPTION	UUID: PROTOCOL
616'	617'

UUID:NUMBER_DEVICES	UUID: PARKED DEVICES
618'	619'

UUID: PICONET STATUS SERVICE CLASS

606'

FIG. 4F

BLUETOOTH PACKET STRUCTURE FOR RESPONSE TO
SDP SERVICE SEARCH ATTRIBUTE REQUEST,
RESPONSE SENT BY AD HOC NETWORK INFORMATION PROVIDER 106
TO ARRIVING DEVICE 100

570

ACCESS CODE ADDRESS OF DEVICE 100	HEADER		SDP PROTOCOL DATA UNIT			
	AM_ADDR SET=1	ACL	PDU ID	TRANS-ACTION ID	LENGTH	SDP SERVICE SEARCH ATTRIBUTE RESPONSE

573   574   574'   575 575' 576   571   572   577

577

SERVICE RECORD HANDLE LIST 578 AND ATTRIBUTES 579

	ATTRIBUTE: INFO_PROVIDER	ATTRIBUTE: LAST UPDATE
614"	VALUE = YES	VALUE = 14:35:23	615"

	ATTRIBUTE: ENCRYPTION	ATTRIBUTE: PROTOCOL
616"	VALUE = YES	VALUE = SSL	617"

	ATTRIBUTE:NUMBER_DEVICES	ATTRIBUTE: PARKED DEVICES
618"	VALUE = 3	VALUE = NONE	619"

FIG. 4G

BLUETOOTH PACKET STRUCTURE FOR
SDP SERVICE SEARCH ATTRIBUTE REQUEST PACKET
SENT BY ARRIVING DEVICE 100
TO AD HOC NETWORK INFORMATION PROVIDER 106

FIG. 4H

BLUETOOTH PACKET STRUCTURE FOR RESPONSE TO
SDP SERVICE SEARCH ATTRIBUTE REQUEST,
RESPONSE SENT BY AD HOC NETWORK INFORMATION PROVIDER 106
TO ARRIVING DEVICE 100

	HEADER 571			SDP PROTOCOL DATA UNIT 572		
ACCESS CODE ADDRESS OF DEVICE 100	AM_ADDR SET=1	ACL	PDU ID	TRANS-ACTION ID	LENGTH	SDP SERVICE SEARCH ATTRIBUTE RESPONSE 592
573	574	574'	575	575'	576	

590

SERVICE RECORD HANDLE LIST 594 AND ATTRIBUTES 596

ATTRIBUTE: NAME VALUE = STEPHANE 632"	ATTRIBUTE: STATUS VALUE = METS - PITCHER 633"
ATTRIBUTE: NAME VALUE = JOHN 634"	ATTRIBUTE: STATUS VALUE = CUBS - AT BAT 635"
ATTRIBUTE: NAME VALUE = MIKKO 636"	ATTRIBUTE: STATUS VALUE = METS - FIRST BASE 637"

592

FIG. 4I BLUETOOTH PACKET STRUCTURE FOR
SDP SERVICE SEARCH ATTRIBUTE REQUEST PACKET
SENT BY ARRIVING DEVICE 100
TO AD HOC NETWORK INFORMATION PROVIDER 116

FIG. 4J

BLUETOOTH PACKET STRUCTURE FOR RESPONSE TO
SDP SERVICE SEARCH ATTRIBUTE REQUEST,
RESPONSE SENT BY AD HOC NETWORK INFORMATION PROVIDER 116
TO ARRIVING DEVICE 100

590A

573	574	574'	575	575'	576	572
ACCESS CODE ADDRESS OF DEVICE 100	AM_ADDR SET=1	ACL	PDU ID	TRANS-ACTION ID	LENGTH	SDP SERVICE SEARCH ATTRIBUTE RESPONSE
	HEADER 571				SDP PROTOCOL DATA UNIT	592A

SERVICE RECORD HANDLE LIST 594A AND ATTRIBUTES 596A

	ATTRIBUTE: NAME	ATTRIBUTE: STATUS
632A"	VALUE = ALICE	VALUE = DESIGNING DECK 633A"
634A"	ATTRIBUTE: NAME VALUE = BOB	ATTRIBUTE: STATUS VALUE = DESIGNING TRUSS 635A"
636A"	ATTRIBUTE: NAME VALUE = CHARLIE	ATTRIBUTE: STATUS VALUE = DESIGNING PIER 637A"

592A

FIG. 4K

BLUETOOTH PACKET STRUCTURE FOR
SDP SERVICE SEARCH ATTRIBUTE REQUEST PACKET
SENT BY ARRIVING DEVICE 100
TO AD HOC NETWORK INFORMATION PROVIDER 126

580B

ACCESS CODE ADDRESS OF DEVICE 100 — 563

HEADER — 561

AM_ADDR SET=1 — 564

ACL — 564'

PDU ID — 565

TRANS-ACTION ID — 565'

LENGTH — 566

SDP PROTOCOL DATA UNIT — 562

SDP SERVICE SEARCH ATTRIBUTE REQUEST — 582B

SERVICE SEARCH PATTERN 584B AND ATTRIBUTE ID LIST 586B — 582B

UUID: USER NAME SERVICE CLASS — 612B'

UUID: NAME — 632B' | UUID: STATUS — 633B'

UUID: NAME — 634B' | UUID: STATUS — 635B'

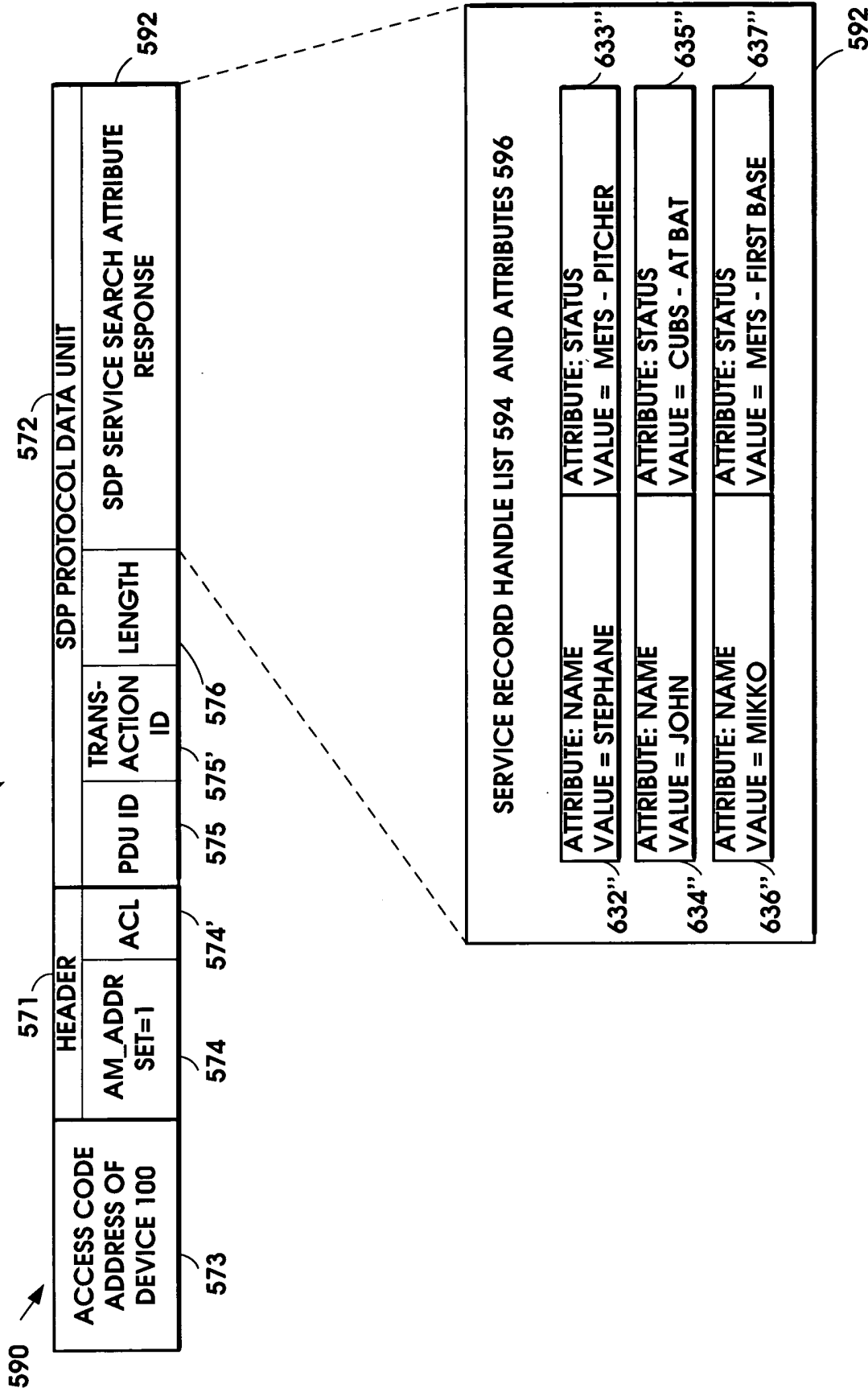UUID: NAME — 636B' | UUID: STATUS — 637B'

FIG. 4L

BLUETOOTH PACKET STRUCTURE FOR RESPONSE TO
SDP SERVICE SEARCH ATTRIBUTE REQUEST,
RESPONSE SENT BY AD HOC NETWORK INFORMATION PROVIDER 126
TO ARRIVING DEVICE 100

590B ⟶

HEADER 571			SDP PROTOCOL DATA UNIT 572		
ACCESS CODE ADDRESS OF DEVICE 100	AM_ADDR SET=1	ACL	PDU ID	TRANS-ACTION ID	LENGTH	SDP SERVICE SEARCH ATTRIBUTE RESPONSE
573	574	574'	575	575'	576	592B

SERVICE RECORD HANDLE LIST 594B AND ATTRIBUTES 596B

ATTRIBUTE: NAME	ATTRIBUTE: STATUS
VALUE = GATEWAY INTERFCE	VALUE = PORTS ARE AVAILABLE

632B" 633B"

ATTRIBUTE: NAME	ATTRIBUTE: STATUS
VALUE = DAN	VALUE = COMMUNICATING

634B" 635B"

ATTRIBUTE: NAME	ATTRIBUTE: STATUS
VALUE = ELIZABETH	VALUE = COMMUNICATING

636B" 637B"

592B

FIG. 5

PUBLIC BROWSE ROOT — 602

PICONET STATUS SERVICE CLASS — 606

ATTRIBUTE: INFO_PROVIDER VALUE = YES	ATTRIBUTE: LAST UPDATE VALUE = 14:35:23	614
ATTRIBUTE: ENCRYPTION VALUE = YES	ATTRIBUTE: PROTOCOL VALUE = SSL	616
ATTRIBUTE:NUMBER_DEVICES VALUE = 3	ATTRIBUTE: PARKED DEVICES VALUE = NONE	618

PROGRAM TYPE SERVICE CLASS — 608

| ATTRIBUTE: UTILITY_PGM
VALUE = COLLABORATE | ATTRIBUTE: STATUS
VALUE = OFF | 620 |
| ATTRIBUTE: GAME_PGM
VALUE = BASEBALL | ATTRIBUTE: STATUS
VALUE: 1ST INNING/SCORE 1-0 | 622 |

MEMBER GROUP — 604

DEVICE TYPE SERVICE CLASS — 610

ATTRIBUTE: DEVICE VALUE = PALMTOP PDA	ATTRIBUTE: BLUETOOTH VERSION VALUE = 2.0	624
ATTRIBUTE: DEVICE VALUE = LAPTOP COMPUTER	ATTRIBUTE: BLUETOOTH VERSION VALUE = 1.2	626
ATTRIBUTE: DEVICE VALUE = WEARABLE DEVICE	ATTRIBUTE: BLUETOOTH VERSION VALUE = 2.0	628
ATTRIBUTE: DEVICE VALUE = "---"	ATTRIBUTE: BLUETOOTH VERSION VALUE = "---"	630

USER NAME SERVICE CLASS — 612

ATTRIBUTE: NAME VALUE = STEPHANE	ATTRIBUTE: STATUS VALUE = METS - PITCHER	632
ATTRIBUTE: NAME VALUE = JOHN	ATTRIBUTE: STATUS VALUE = CUBS - AT BAT	634
ATTRIBUTE: NAME VALUE = MIKKO	ATTRIBUTE: STATUS VALUE = METS - FIRST BASE	636
ATTRIBUTE: NAME VALUE = "---"	ATTRIBUTE: STATUS VALUE = "---"	638

SDP SERVICE REGISTRY 600
IN AD HOC NETWORK INFORMATION PROVIDER 106 BEFORE ADDITION OF ARRIVING DEVICE 100

FIG. 5A

SDP SERVICE REGISTRY
640
IN SLAVE DEVICE 108

PUBLIC BROWSE ROOT

642

644

PICONET STATUS SERVICE CLASS

646

ATTRIBUTE: INFO_PROVIDER	ATTRIBUTE: PROVIDER ADDRESS
VALUE = NO	VALUE = PROVIDER'S BD_ADDR

648

FIG. 5B

SDP SERVICE REGISTRY
650
IN MASTER DEVICE 104

PUBLIC BROWSE ROOT

652

654

PICONET STATUS SERVICE CLASS

656

ATTRIBUTE: INFO_PROVIDER	ATTRIBUTE: PROVIDER ADDRESS
VALUE = NO	VALUE = PROVIDER'S BD_ADDR

658

FIG. 5C

SDP SERVICE REGISTRY
660
IN SLAVE DEVICE 100

PUBLIC BROWSE ROOT

662

664

PICONET STATUS SERVICE CLASS

666

ATTRIBUTE: INFO_PROVIDER	ATTRIBUTE: PROVIDER ADDRESS
VALUE = NO	VALUE = PROVIDER'S BD_ADDR

668

FIG. 5D

PUBLIC BROWSE ROOT — 602

PICONET STATUS SERVICE CLASS — 606

- 614: ATTRIBUTE: INFO_PROVIDER / VALUE = YES — ATTRIBUTE: LAST UPDATE / VALUE = 14:40:00
- 616: ATTRIBUTE: ENCRYPTION / VALUE = YES — ATTRIBUTE: PROTOCOL / VALUE = SSL
- 618: ATTRIBUTE:NUMBER_DEVICES / VALUE = 4 — ATTRIBUTE: PARKED DEVICES / VALUE = NONE

PROGRAM TYPE SERVICE CLASS — 608

- 620: ATTRIBUTE: UTILITY_PGM / VALUE = COLLABORATE — ATTRIBUTE: STATUS / VALUE = OFF
- 622: ATTRIBUTE: GAME_PGM / VALUE = BASEBALL — ATTRIBUTE: STATUS / VALUE: 2ND INNING/SCORE 1-1

MEMBER GROUP — 604

DEVICE TYPE SERVICE CLASS — 610

- 624: ATTRIBUTE: DEVICE / VALUE = PALMTOP PDA — ATTRIBUTE: BLUETOOTH VERSION / VALUE = 2.0
- 626: ATTRIBUTE: DEVICE / VALUE = LAPTOP COMPUTER — ATTRIBUTE: BLUETOOTH VERSION / VALUE = 1.2
- 628: ATTRIBUTE: DEVICE / VALUE = WEARABLE DEVICE — ATTRIBUTE: BLUETOOTH VERSION / VALUE = 2.0
- 630: ATTRIBUTE: DEVICE / VALUE = PALMTOP PDA — ATTRIBUTE: BLUETOOTH VERSION / VALUE = 2.0

USER NAME SERVICE CLASS — 612

- 632: ATTRIBUTE: NAME / VALUE = STEPHANE — ATTRIBUTE: STATUS / VALUE = METS - PITCHER
- 634: ATTRIBUTE: NAME / VALUE = JOHN — ATTRIBUTE: STATUS / VALUE = CUBS - AT BAT
- 636: ATTRIBUTE: NAME / VALUE = MIKKO — ATTRIBUTE: STATUS / VALUE = METS - FIRST BASE
- 638: ATTRIBUTE: NAME / VALUE = KAI — ATTRIBUTE: STATUS / VALUE = CUBS - NEXT BATER

SDP SERVICE REGISTRY 600
IN AD HOC NETWORK INFORMATION PROVIDER 106 AFTER ADDITION OF ARRIVING DEVICE 100

FIG. 6A

PUBLIC BROWSE ROOT
602A

MEMBER GROUP
604A

PICONET STATUS SERVICE CLASS
606A

PROGRAM TYPE SERVICE CLASS
608A

DEVICE TYPE SERVICE CLASS
610A

USER NAME SERVICE CLASS
612A

SDP SERVICE REGISTRY
600A
IN AD HOC NETWORK
INFORMATION
PROVIDER 116

614A | ATTRIBUTE: INFO_PROVIDER | ATTRIBUTE: LAST UPDATE
| VALUE = YES | VALUE = 14:20:15

616A | ATTRIBUTE: ENCRYPTION | ATTRIBUTE: PROTOCOL
| VALUE = YES | VALUE = IPSEC

618A | ATTRIBUTE:NUMBER_DEVICES | ATTRIBUTE: PARKED DEVICES
| VALUE = 3 | VALUE = NONE

620A | ATTRIBUTE: UTILITY_PGM | ATTRIBUTE: STATUS
| VALUE = COLLABORATE | VALUE = CAD - BRIDGE DESIGN

622A | ATTRIBUTE: GAME_PGM | ATTRIBUTE: STATUS
| VALUE = BASEBALL | VALUE: OFF

624A | ATTRIBUTE: DEVICE | ATTRIBUTE: BLUETOOTH VERSION
| VALUE = LAPTOP COMPUTER | VALUE = 2.0

626A | ATTRIBUTE: DEVICE | ATTRIBUTE: BLUETOOTH VERSION
| VALUE = LAPTOP COMPUTER | VALUE = 2.0

628A | ATTRIBUTE: DEVICE | ATTRIBUTE: BLUETOOTH VERSION
| VALUE = LAPTOP COMPUTER | VALUE = 2.0

630A | ATTRIBUTE: DEVICE | ATTRIBUTE: BLUETOOTH VERSION
| VALUE = "---" | VALUE = "---"

632A | ATTRIBUTE: NAME | ATTRIBUTE: STATUS
| VALUE = ALICE | VALUE = DESIGNING DECK

634A | ATTRIBUTE: NAME | ATTRIBUTE: STATUS
| VALUE = BOB | VALUE = DESIGNING TRUSS

636A | ATTRIBUTE: NAME | ATTRIBUTE: STATUS
| VALUE = CHARLIE | VALUE = DESIGNING PIER

638A | ATTRIBUTE: NAME | ATTRIBUTE: STATUS
| VALUE = "---" | VALUE = "---"

FIG. 6B

PUBLIC BROWSE ROOT — 602B

MEMBER GROUP — 604B

PICONET STATUS SERVICE CLASS — 606B

PROGRAM TYPE SERVICE CLASS — 608B

DEVICE TYPE SERVICE CLASS — 610B

USER NAME SERVICE CLASS — 612B

ID	Attribute	Attribute
614B	ATTRIBUTE: INFO_PROVIDER / VALUE = YES	ATTRIBUTE: LAST UPDATE / VALUE = 14:30:10
616B	ATTRIBUTE: ENCRYPTION / VALUE = YES	ATTRIBUTE: PROTOCOL / VALUE = SSL
618B	ATTRIBUTE:NUMBER_DEVICES / VALUE = 3	ATTRIBUTE: PARKED DEVICES / VALUE = NONE
620B	ATTRIBUTE: UTILITY_PGM / VALUE = COLLABORATE	ATTRIBUTE: STATUS / VALUE = OFF
622B	ATTRIBUTE: UTILITY_PGM / VALUE = INTERNET GATEWAY	ATTRIBUTE: STATUS / VALUE = RUNNING TCP/IP
624B	ATTRIBUTE: DEVICE / VALUE = SERVER COMPUTER	ATTRIBUTE: BLUETOOTH VERSION / VALUE = 2.0
626B	ATTRIBUTE: DEVICE / VALUE = LAPTOP COMPUTER	ATTRIBUTE: BLUETOOTH VERSION / VALUE = 2.0
628B	ATTRIBUTE: DEVICE / VALUE = PALMTOP	ATTRIBUTE: BLUETOOTH VERSION / VALUE = 2.0
630B	ATTRIBUTE: DEVICE / VALUE = "---"	ATTRIBUTE: BLUETOOTH VERSION / VALUE = "---"
632B	ATTRIBUTE: NAME / VALUE = GATEWAY INTERFCE	ATTRIBUTE: STATUS / VALUE = PORTS ARE AVAILABLE
634B	ATTRIBUTE: NAME / VALUE = DAN	ATTRIBUTE: STATUS / VALUE = COMMUNICATING
636B	ATTRIBUTE: NAME / VALUE = ELIZABETH	ATTRIBUTE: STATUS / VALUE = COMMUNICATING
638B	ATTRIBUTE: NAME / VALUE = "---"	ATTRIBUTE: STATUS / VALUE = "---"

SDP SERVICE REGISTRY 600B
IN AD HOC NETWORK
INFORMATION
PROVIDER 126

FIG. 7

INTERNET
123

INTERNET
GATEWAY
125

AD HOC
INTERNET
GATEWAY
IBSS
122(I)

ARRIVING DEVICE 100(I)
FORMS A NETWORK
DISCOVERY MENU OF THE
SEVERAL IBSS DERIVED
FROM THE SERVICE
RECORDS ACCESSED
FROM THE
AD HOC NETWORK
INFORMATION PROVIDERS
106(I), 116(I), 126 (I)

IEEE 802.11
DEVICE
128(I)

LINK
129

IEEE 802.11
DEVICE
124(I)

IEEE 802.11
DEVICE
100(I)

130"

LINK
127

IEEE 802.11
DEVICE
126(I)
(INFO PROV)

AD HOC
BASEBALL
IBSS
102(I)

130

130'

IEEE 802.11
DEVICE
106(I)
(INFO PROV)

IEEE 802.11
DEVICE
116(I)
(INFO PROV)

AD HOC
COLLABORATION
IBSS
112(I)

LINK
105

LINK
107

LINK
117

IEEE 802.11
DEVICE
104(I)

LINK
109

IEEE 802.11
DEVICE
108(I)

IEEE 802.11
DEVICE
114(I)

LINK
119

IEEE 802.11
DEVICE
118(I)

T0/200 "пест6960
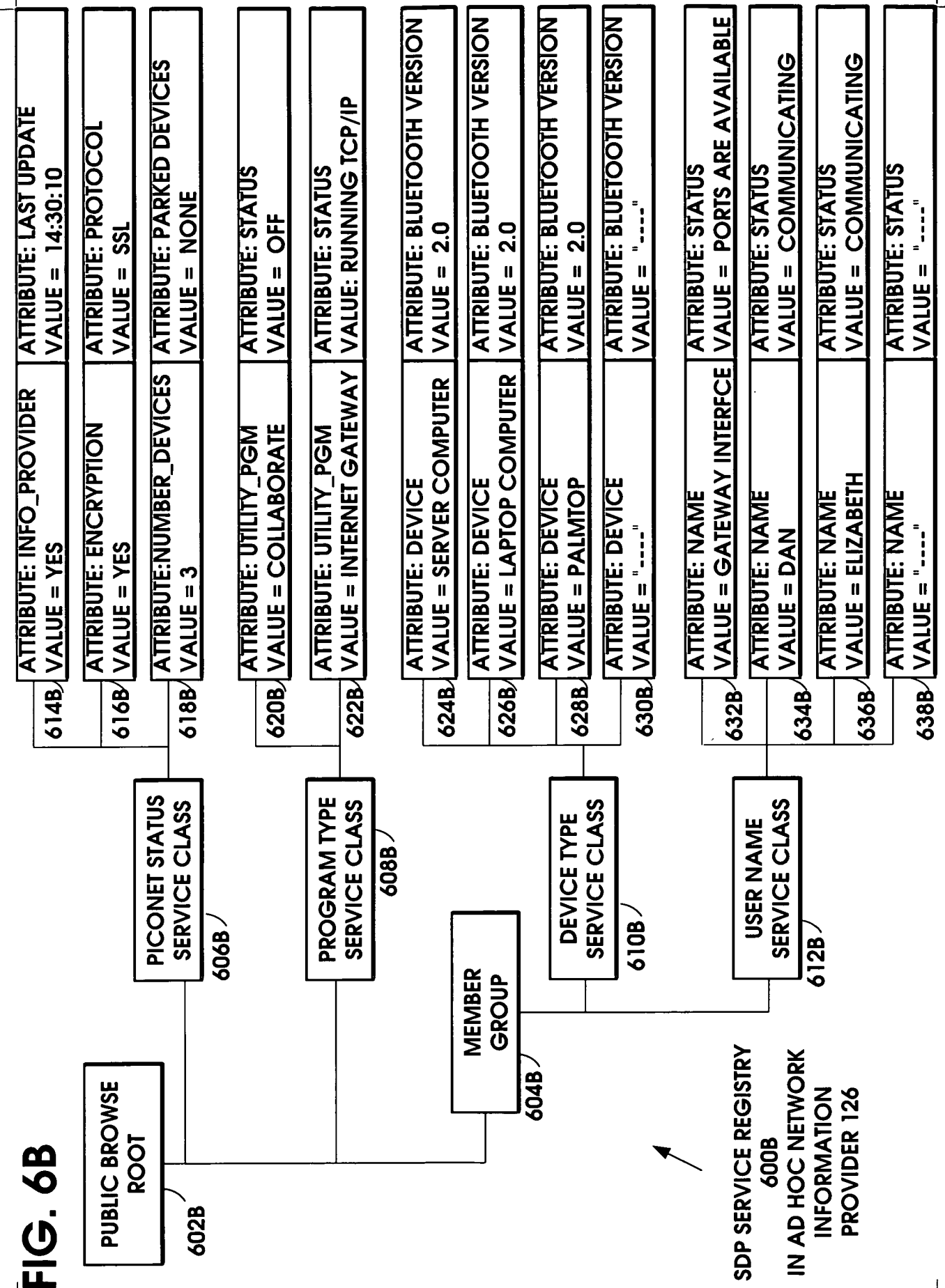
FIG. 7A

IEEE 802.11 PACKET STRUCTURE FOR PROBE REQUEST,
SENT BY ARRIVING DEVICE 100(I) TO
AD HOC NETWORK INFORMATION PROVIDER 106(I)

560(I)

FRAME CONTROL	ADDRESSES 1, 2, 3, 4	SEQUENCE CONTROL			
561(I)	563(I)	564(I)			

FRAME BODY - INFORMATION ELEMENT

ELEMENT ID=254	LENGTH	SERVICE ATTRIBUTE REQUEST
565(I)	566(I)	562(I)

567(I)

567(I)

SERVICE SEARCH PATTERN 568 AND ATTRIBUTE ID LIST 569

UUID: INFO_PROVIDER	UUID: LAST UPDATE
614'	615'

UUID: ENCRYPTION	UUID: PROTOCOL
616'	617'

UUID:NUMBER_DEVICES	UUID: ACCESS POINT
618'	619'

UUID: AD HOC
NETWORK STATUS
SERVICE CLASS

606'

FIG. 7B

IEEE 802.11 PACKET STRUCTURE FOR PROBE RESPONSE TO PROBE REQUEST, THIS RESPONSE SENT BY AD HOC NETWORK INFORMATION PROVIDER 106(I) TO ARRIVING DEVICE 100(I)

570(I)

FRAME BODY - INFORMATION ELEMENT

572(I)

FRAME CONTROL	ADDRESSES 1, 2, 3, 4	SEQUENCE CONTROL	ELEMENT ID=255	LENGTH	SERVICE ATTRIBUTE RESPONSE
571(I)	573(I)	574(I)	575(I)	576(I)	577(I)

577(I)

SERVICE RECORD HANDLE LIST 578 AND ATTRIBUTES 579

ATTRIBUTE: INFO_PROVIDER	ATTRIBUTE: LAST UPDATE
614" VALUE = YES	615" VALUE = 14:35:23

ATTRIBUTE: ENCRYPTION	ATTRIBUTE: PROTOCOL
616" VALUE = YES	617" VALUE = SSL

ATTRIBUTE:NUMBER_DEVICES	ATTRIBUTE: ACCESS POINT
618" VALUE = 3	619" VALUE = NONE

FIG. 7C

PUBLIC BROWSE ROOT — 602(I)

AD HOC NETWORK STATUS SERVICE CLASS — 606(I)

- 614: ATTRIBUTE: INFO_PROVIDER | VALUE = YES || ATTRIBUTE: LAST UPDATE | VALUE = 14:35:23
- 616: ATTRIBUTE: ENCRYPTION | VALUE = YES || ATTRIBUTE: PROTOCOL | VALUE = SSL
- 618: ATTRIBUTE: NUMBER_DEVICES | VALUE = 3 || ATTRIBUTE: ACCESS POINT | VALUE = NONE

PROGRAM TYPE SERVICE CLASS — 608(I)

- 620: ATTRIBUTE: UTILITY_PGM | VALUE = COLLABORATE || ATTRIBUTE: STATUS | VALUE = OFF
- 622: ATTRIBUTE: GAME_PGM | VALUE = BASEBALL || ATTRIBUTE: STATUS | VALUE: 1ST INNING/SCORE 1-0

MEMBER GROUP — 604(I)

DEVICE TYPE SERVICE CLASS — 610(I)

- 624: ATTRIBUTE: DEVICE | VALUE = PALMTOP PDA || ATTRIBUTE: VERSION | VALUE = 2.0
- 626: ATTRIBUTE: DEVICE | VALUE = LAPTOP COMPUTER || ATTRIBUTE: VERSION | VALUE = 1.2
- 628: ATTRIBUTE: DEVICE | VALUE = WEARABLE DEVICE || ATTRIBUTE: VERSION | VALUE = 2.0
- 630: ATTRIBUTE: DEVICE | VALUE = "----" || ATTRIBUTE: VERSION | VALUE = "----"

USER NAME SERVICE CLASS — 612(I)

- 632: ATTRIBUTE: NAME | VALUE = STEPHANE || ATTRIBUTE: STATUS | VALUE = METS - PITCHER
- 634: ATTRIBUTE: NAME | VALUE = JOHN || ATTRIBUTE: STATUS | VALUE = CUBS - AT BAT
- 636: ATTRIBUTE: NAME | VALUE = MIKKO || ATTRIBUTE: STATUS | VALUE = METS - FIRST BASE
- 638: ATTRIBUTE: NAME | VALUE = "----" || ATTRIBUTE: STATUS | VALUE = "----"

IEEE 802.11 SERVICE REGISTRY 600(I) IN AD HOC NETWORK INFORMATION PROVIDER 106(I) BEFORE ADDITION OF ARRIVING DEVICE 100(I)

FIG. 8

INTERNET
123

INTERNET
GATEWAY
125

AD HOC
INTERNET
GATEWAY
SUBNET
122(H2)

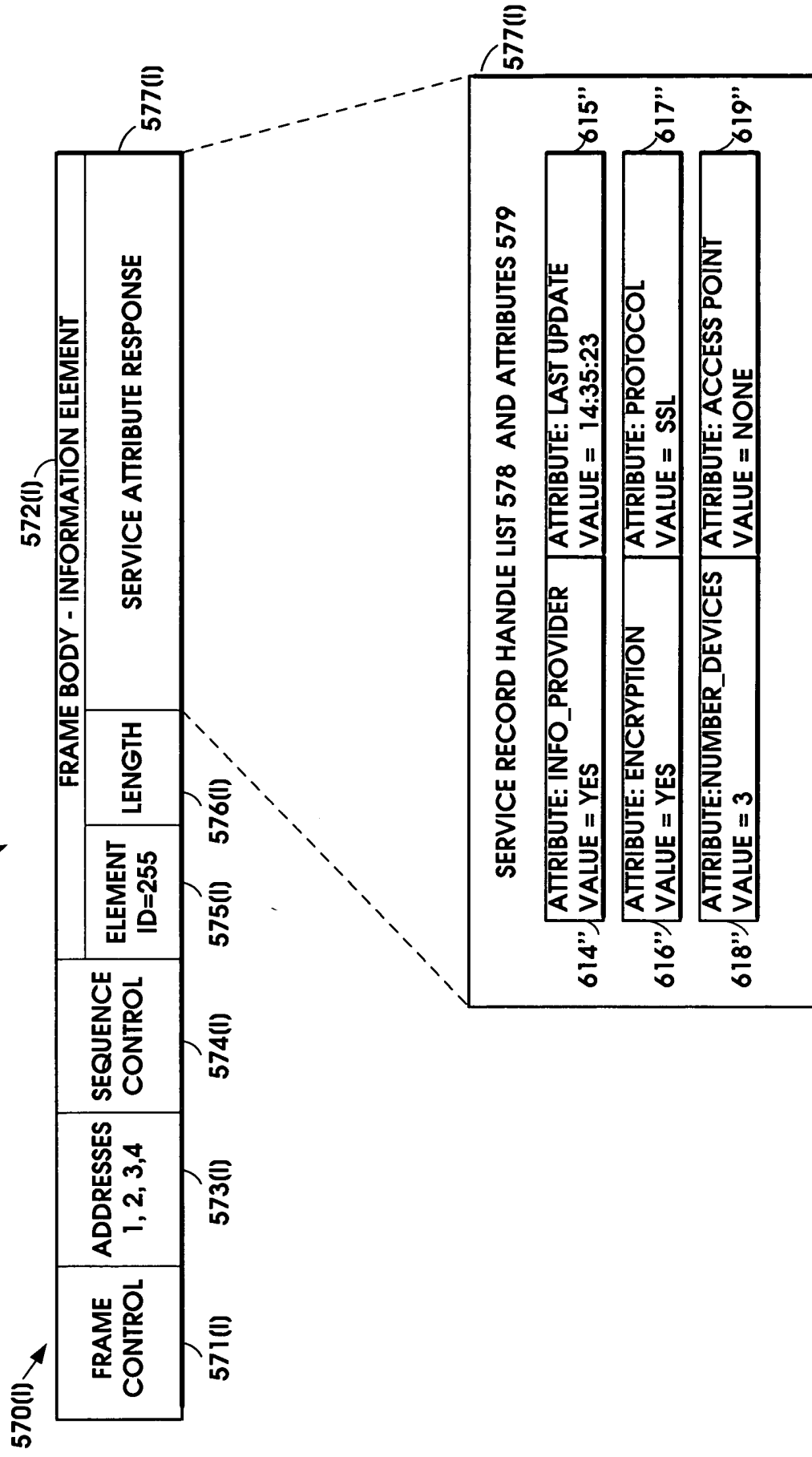LINK
129
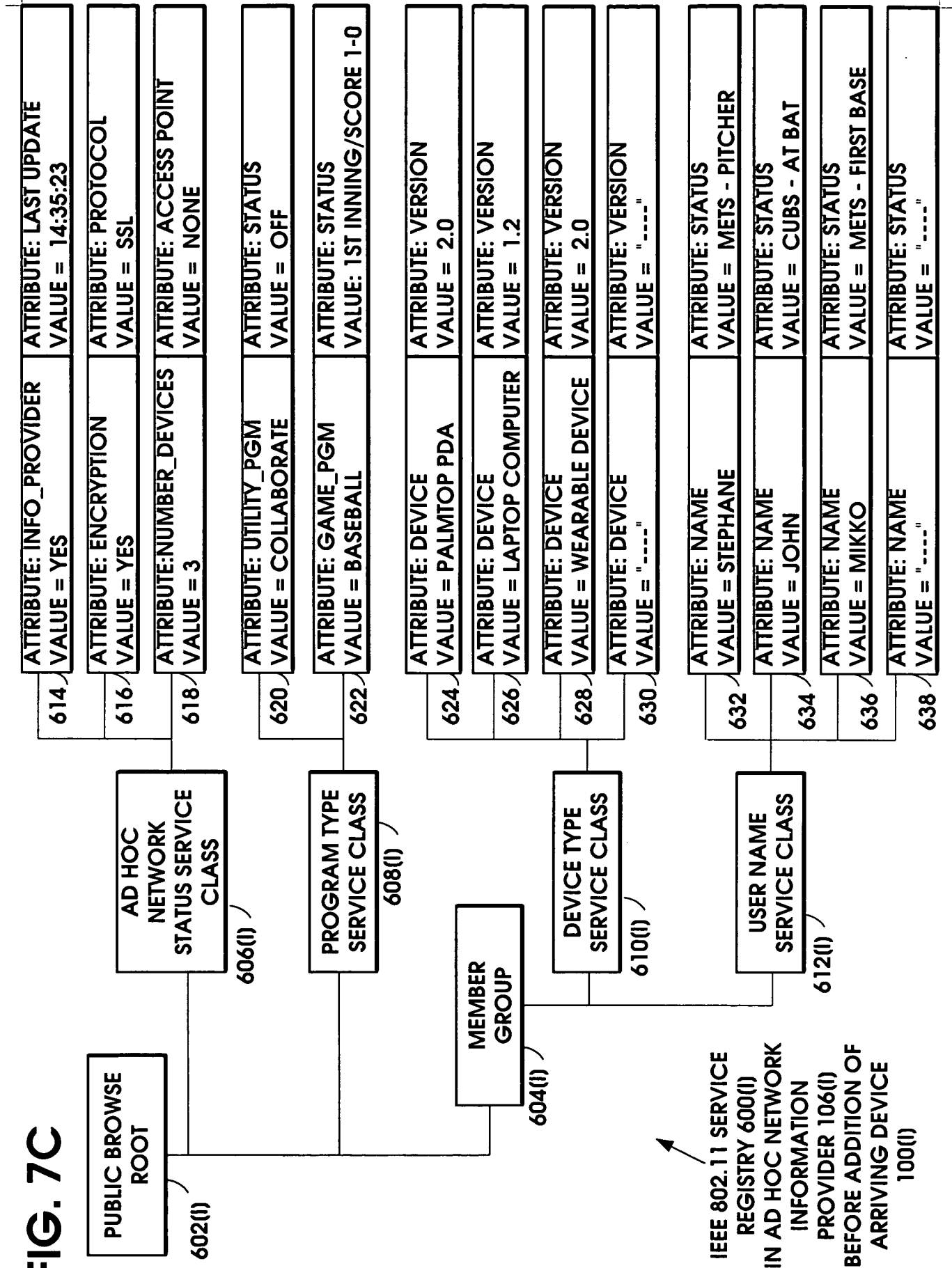
HIPERLAN/2
DEVICE
128(H2)

HIPERLAN/2
CENTRAL
CONTROL'R
124(H2)

ARRIVING DEVICE 100(H2)
FORMS A NETWORK
DISCOVERY MENU OF THE
SUBNETS DERIVED FROM
THE SERVICE RECORDS
ACCESSED FROM THE
AD HOC NETWORK
INFORMATION PROVIDERS
106(H2), 116(H2), 126 (H2)

LINK
127

HIPERLAN/2
DEVICE
100(H2)

130"

HIPERLAN/2
DEVICE
126(H2)
(INFO PROV)

AD HOC
BASEBALL
SUBNET
102(H2)

130

130'

AD HOC
COLLABORATION
SUBNET
112(H2)

HIPERLAN/2
DEVICE
106(H2)
(INFO PROV)

LINK
105

HIPERLAN/2
DEVICE
116(H2)
(INFO PROV)

LINK
107

LINK
117

HIPERLAN/2
CENTRAL
CONTROL'R
104(H2)

HIPERLAN/2
DEVICE
108(H2)

LINK
109

HIPERLAN/2
CENTRAL
CONTROL'R
114(H2)

HIPERLAN/2
DEVICE
118(H2)

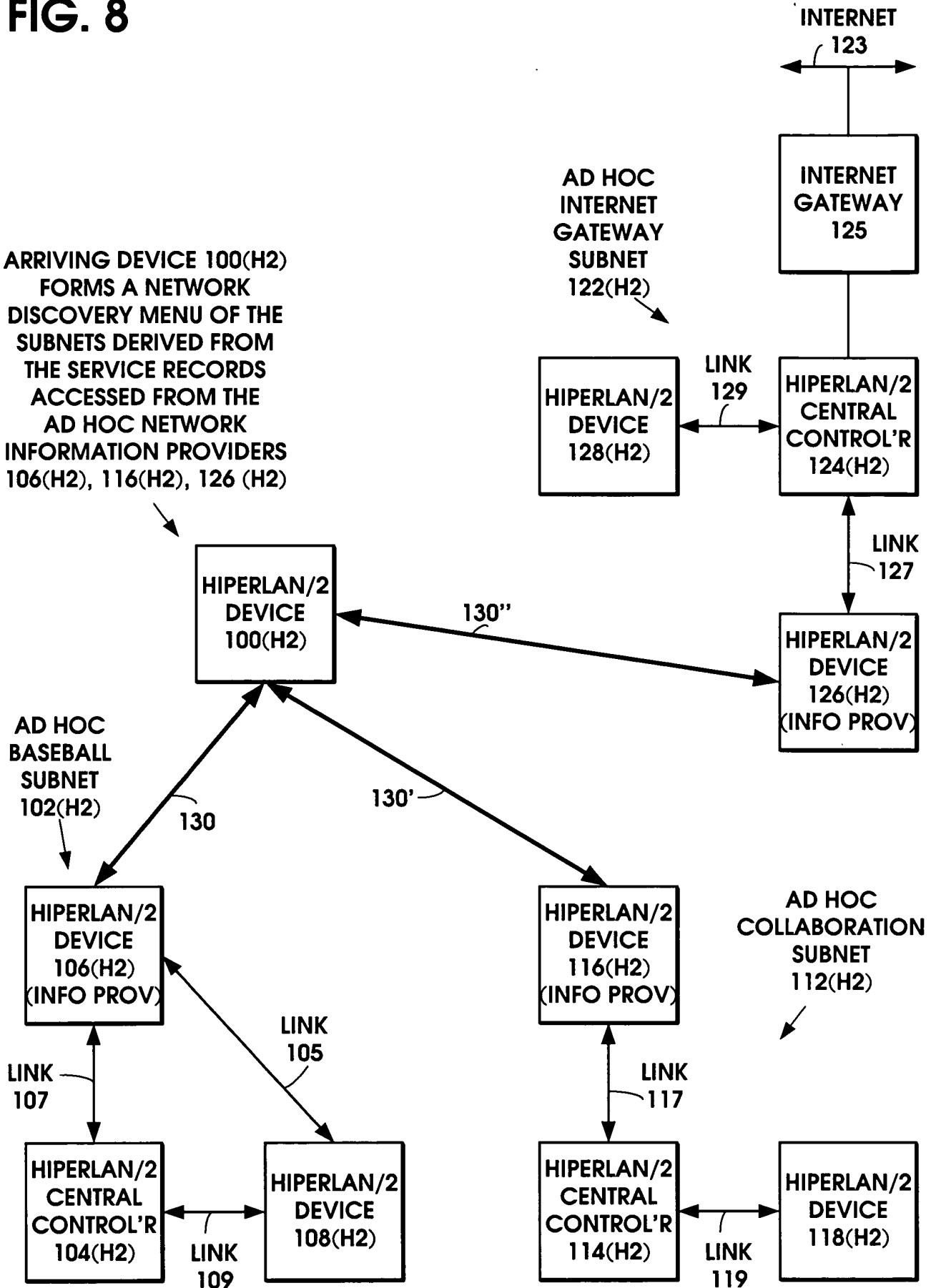LINK
119

FIG. 8A

TO←290←28E TO8960

HIPERLAN TYPE 2 MAC FRAME STRUCTURE 800
INCLUDING RANDOM CHANNEL RESOURCE REQUEST 836,
SENT BY ARRIVING DEVICE 100(H2) TO
CENTRAL CONTROLLER DEVICE 104(H2)

800

BROADCAST PHASE	DOWNLINK PHASE	DIRECT LINK PHASE	UPLINK PHASE	RANDOM ACCESS PHASE
802	810	818	826	834

Broadcast Phase 804 detail:

B'CAST FROM DEVICE 104(H2)	B'CAST FROM DEVICE 104(H2)
BEACON SIGNAL "INFO PROVIDER = DEVICE 106(H2)"	RESOURCE GRANTS

804 / 806

Downlink Phase detail:

FROM DEVICE 104(H2)	FROM DEVICE 104(H2)
DATA TO DEVICE 106(H2)	DATA TO DEVICE 108(H2)

812 / 814

Direct Link Phase detail:

FROM DEVICE 108(H2)	FROM DEVICE 106(H2)
DATA TO DEVICE 106(H2)	DATA TO DEVICE 108(H2)

820 / 822

Uplink Phase detail:

FROM DEVICE 108(H2)	FROM DEVICE 106(H2)
DATA TO DEVICE 104(H2)	DATA TO DEVICE 104(H2)

828 / 830

Random Access Phase detail:

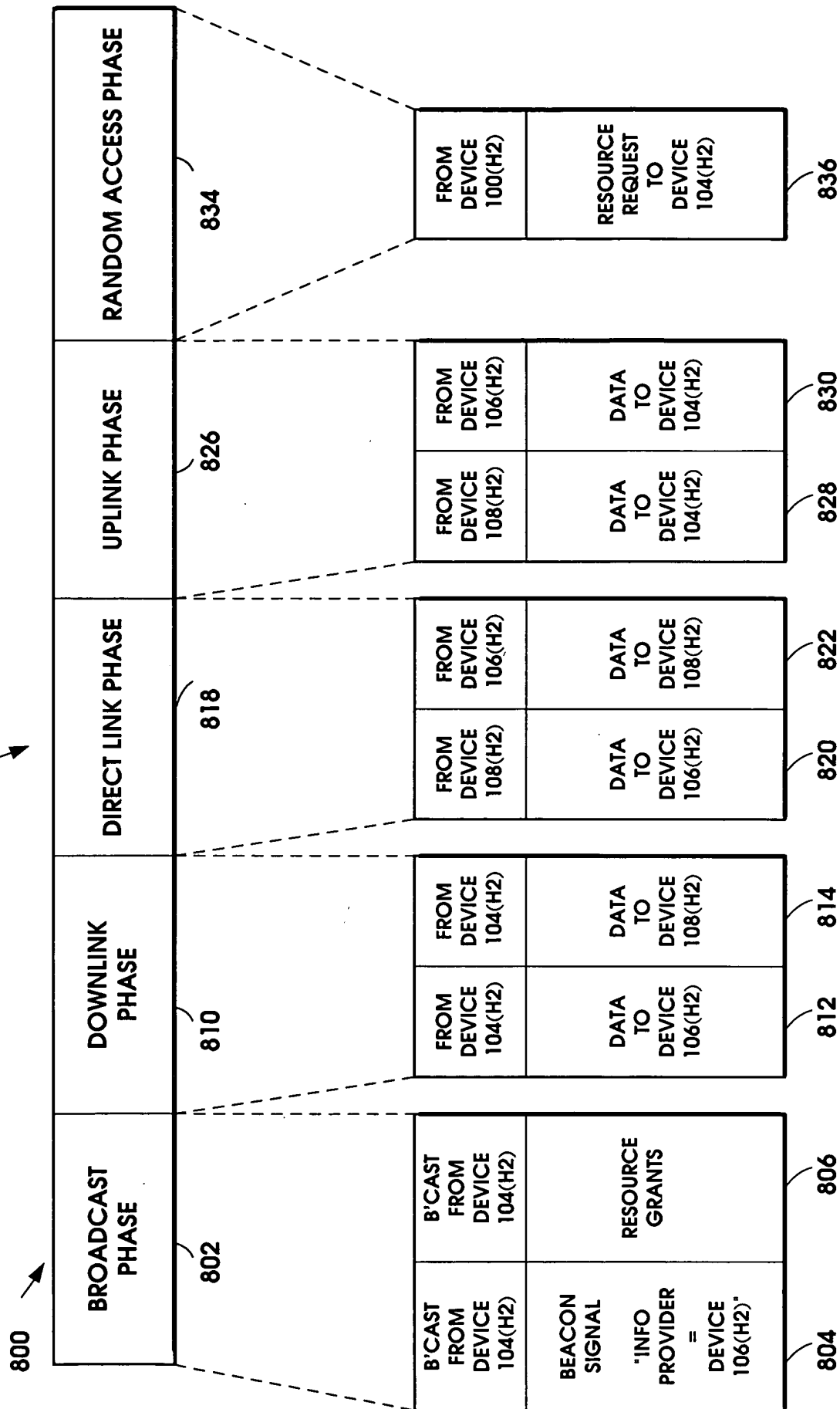| FROM DEVICE 100(H2) |
|---|
| RESOURCE REQUEST TO DEVICE 104(H2) |

836

FIG. 8B

HIPERLAN TYPE 2 MAC FRAME STRUCTURE 800'
INCLUDING SERVICE RECORD REQUEST 838,
SENT BY ARRIVING DEVICE 100(H2) TO
AD HOC NETWORK INFORMATION PROVIDER 106(H2)

800'

BROADCAST PHASE	DOWNLINK PHASE	DIRECT LINK PHASE	UPLINK PHASE	RANDOM ACCESS PHASE
802	810	818	826	834

838

SERVICE SEARCH PATTERN 568 AND ATTRIBUTE ID LIST 569

840

UUID: AD HOC NETWORK STATUS SERVICE CLASS

606'

840A

614' UUID: INFO_PROVIDER

616' UUID: ENCRYPTION

618' UUID:NUMBER_DEVICES

840B

UUID: LAST UPDATE 615'

UUID: PROTOCOL 617'

UUID: ACCESS POINT 619'

840C

PART SENT IN FIRST MAC FRAME 800'

PART SENT IN SECOND MAC FRAME 800'A

PART SENT IN THIRD MAC FRAME 800'B

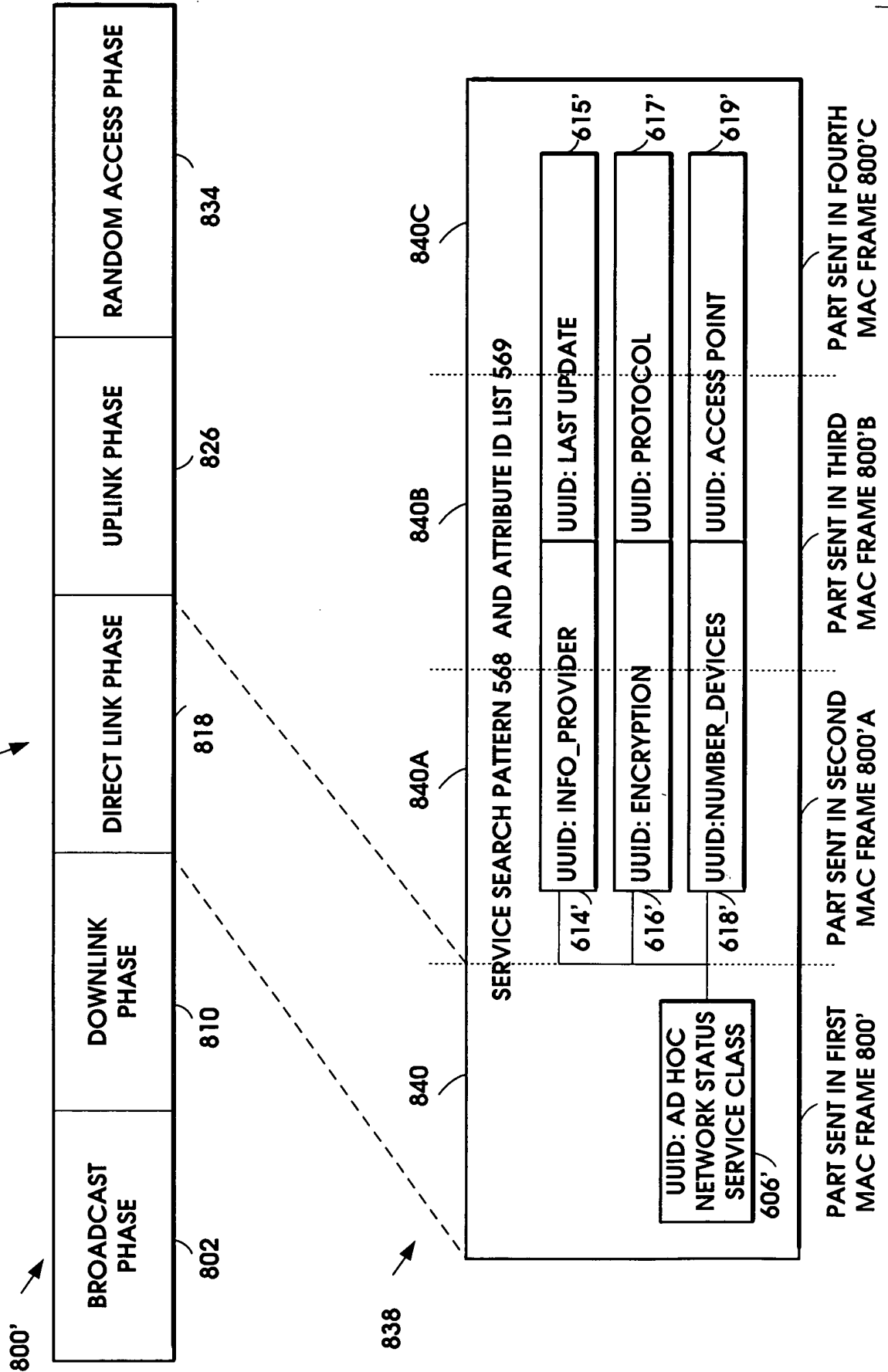PART SENT IN FOURTH MAC FRAME 800'C

FIG. 8C

TOZZ90' ZZC T6850

HIPERLAN TYPE 2 MAC FRAME STRUCTURE 800"
INCLUDING SERVICE RECORD RESPONSE 848,
SENT BY AD HOC NETWORK INFORMATION PROVIDER 106(H2)
TO ARRIVING DEVICE 100(H2)

800"

BROADCAST PHASE	DOWNLINK PHASE	DIRECT LINK PHASE	UPLINK PHASE	RANDOM ACCESS PHASE
802	810	818	826	834

848

SERVICE RECORD HANDLE LIST 578 AND ATTRIBUTES 579

850

850	850A	850B	850C	

614" ATTRIBUTE: INFO_PROVIDER VALUE = YES

616" ATTRIBUTE: ENCRYPTION VALUE = YES

618" ATTRIBUTE:NUMBER_DEVICES VALUE = 3

615" ATTRIBUTE: LAST UPDATE VALUE = 14:35:23

617" ATTRIBUTE: PROTOCOL VALUE = SSL

619" ATTRIBUTE: ACCESS POINT VALUE = NONE

PART SENT IN 1ST MAC FRAME 800"

PART SENT IN 2ND MAC FRAME 800"A

PART SENT IN 3RD MAC FRAME 800"B

PART SENT IN 4TH MAC FRAME 800"C

FIG. 8D

PUBLIC BROWSE ROOT — 602(H2)

AD HOC NETWORK STATUS SERVICE CLASS — 606(H2)

PROGRAM TYPE SERVICE CLASS — 608(H2)

MEMBER GROUP — 604(H2)

DEVICE TYPE SERVICE CLASS — 610(H2)

USER NAME SERVICE CLASS — 612(H2)

HIPERLAN Type 2 SERVICE REGISTRY 600(H2)
IN AD HOC NETWORK INFORMATION PROVIDER 106(H2) BEFORE ADDITION OF ARRIVING DEVICE 100(H2)

Ref	Attribute	Value	Attribute	Value
614	INFO_PROVIDER	YES	LAST UPDATE	14:35:23
616	ENCRYPTION	YES	PROTOCOL	SSL
618	NUMBER_DEVICES	3	ACCESS POINT	NONE
620	UTILITY_PGM	COLLABORATE	STATUS	OFF
622	GAME_PGM	BASEBALL	STATUS	1ST INNING/SCORE 1-0
624	DEVICE	PALMTOP PDA	VERSION	2.0
626	DEVICE	LAPTOP COMPUTER	VERSION	1.2
628	DEVICE	WEARABLE DEVICE	VERSION	2.0
630	DEVICE	"----"	VERSION	"----"
632	NAME	STEPHANE	STATUS	METS - PITCHER
634	NAME	JOHN	STATUS	CUBS - AT BAT
636	NAME	MIKKO	STATUS	METS - FIRST BASE
638	NAME	"----"	STATUS	"----"